



MEMORANDUM

TO: Mayor and Council

FROM: Robert Goode, P.E., Assistant City Manager

CC: Elaine Hart, Interim City Manager
Sue Edwards, Assistant City Manager
Rob Spillar, P.E., Austin Transportation Department
Greg Guernsey, Planning and Zoning Department

DATE: Oct. 4, 2016

SUBJECT: **Update: Capital Metro Downtown Rail Station**

The purpose of this memorandum is to provide you with an update on staff involvement with the potential redevelopment of Capital Metro's downtown rail station.

Earlier this year, Council Resolution 20160225_045 directed staff to work with the Downtown Austin Alliance (DAA) and Capital Metro on a comprehensive review of the area surrounding the proposed station, including an adjacent public plaza. Since that time, staff has been meeting regularly with representatives from the DAA, Capital Metro and other impacted stakeholders to discuss interests, plans, opportunities and ultimately develop a shared vision for this space. The City's Planning and Zoning Department has taken the lead in this process and has developed the attached report for your review.

Along with this planning process, Council Resolution 20160225_045 also directed staff to complete the necessary traffic studies and analysis for the area around the station. This transportation review process focused on the proposed assignment of East 4th Street between Red River and Trinity Streets to transit, bike and pedestrian uses only. Attached to this memorandum you will find a memo from the Austin Transportation Department briefly describing its findings, as well as a fully copy of the traffic study. Staff will also discuss this study at the October 5th Mobility Committee.

Staff has also been actively working with Capital Metro to develop a potential Interlocal Agreement (ILA) for the proposed development of its station and the plaza. The ILA is nearly complete, however a number of major components are still being negotiated—most notably the possible storm drain improvements required as part of construction of the station.

Staff anticipates bringing the draft ILA to Council for its consideration in the coming weeks.

Attachments:

- Planning Coordination Report – Downtown MetroRail Station
- Memo from ATD re: Traffic Analysis of 5th St./4th St. Grid / Capital Metro Station Expansion
- Traffic Study for East 4th and 5th Streets from IH-35 to Brazos Street

Downtown MetroRail Station

Planning Coordination

September 30, 2016



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Fig. 1 shows the existing Downtown Station consisting of one platform serving one track.

INTRODUCTION

The Downtown MetroRail Station is located outside the Austin Convention Center on 4th Street between Neches Street and Trinity Street. It was launched in 2010 as a temporary station due to time and resource constraints within the original MetroRail Red Line Project. The success of the current MetroRail system and the demand for increased service in the downtown Austin area has established the need to redefine and upgrade the Downtown Station into a safe, effective, and more permanent multimodal transit terminal station. In response, Capital Metro began developing plans for upgrading the MetroRail Downtown Station in 2014. Capital Metro has received \$50 million in grant funding from the Texas Department of Transportation (TxDOT) in order to expand the current MetroRail Red Line by purchasing 4 new train cars and completing the MetroRail Downtown Station to address safety and capacity issues.

On February 25th, 2016, the City Council of Austin adopted a resolution (No. 20160225-045) that calls for the City Manager to work with the various stakeholders and City of Austin Departments to coordinate the planning efforts of the Downtown MetroRail Station by developing a shared vision, identifying at-stake projects and initiatives, and documenting recommended plans and outcomes while also noting when stakeholder interests cannot be met. The resolution also stated a need for a comprehensive traffic study to ensure enhanced mobility and safety for all modes of transportation in the area.

EXECUTIVE SUMMARY

The creation of a new and improved downtown multi-modal station presents an exciting opportunity for Austin to expand alternative transportation options, create unique public spaces that are welcoming for all, and work together to make our city vibrant, livable, and connected.

This Planning Coordination report for the Downtown MetroRail Station is intended to communicate the current plans for the new Downtown Station as well to communicate other important considerations to be taken into account for this project.

The Downtown Station is situated in a high activity area with many historic and cultural resources and many diverse users and uses. This Planning Coordination report aims to provide background on the many interests, plans, and projects that are inherent in this area of downtown so as to ensure that all of the surrounding context and future potential is considered throughout the course of the Downtown Station project.

After taking a comprehensive look at the Downtown Station's surroundings and considering input from key stakeholders, a number of recommendations have been created for the Downtown Station project that, when taken into account, will allow for a smooth transition from the current station and surrounding conditions to a beautiful and functional Downtown Station with great public spaces that welcome everyone through the gateways of Downtown Austin.



Fig. 2 shows the current elevated Downtown Station platform.

VISION FOR A DOWNTOWN MULTIMODodal STATION

Existing Station Conditions

The current MetroRail Red Line is Capital Metro's 32 mile commuter rail service that extends from downtown Austin to Leander with a single track. Since launching in 2010, the ridership has increased drastically, rising over 225% in the last four years. Trains are often at standing room only during morning and evening rush hours. Peak boarding times have often exceeded 500 passengers. There is currently only one boarding platform at the Downtown Station measuring approximately 130 feet by 10 feet with ramp and stair access to the raised platform and limited designated space for queuing before boarding. Several safety issues are also cited in this high activity area with multiple crossing conflicts. Also, due to the single platform, there is little capacity for increased train frequency and increased train lengths. The current Red Line train only has the capacity to carry roughly 200 passengers per train with departures approximately every 30 minutes, totaling a capacity for <400 people per hour.



Fig. 3 shows crowds of people waiting in the rain for the MetroRail at the Downtown Station.

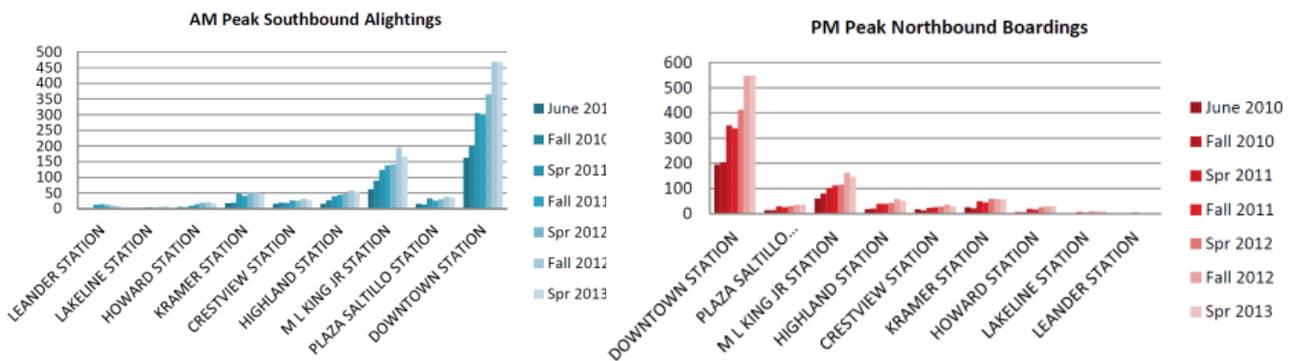
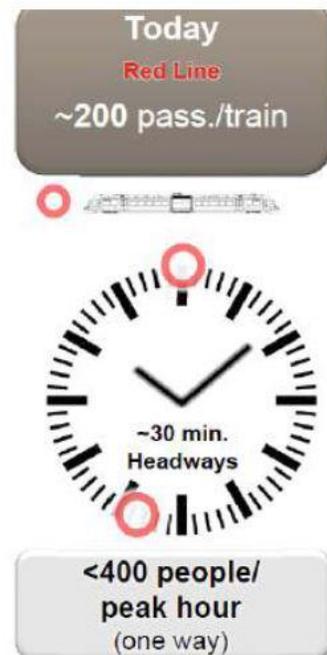


Fig. 4 shows the current capacity for the Red Line including passenger capacity and headways.

Fig. 5 and 6 are charts showing peak boardings at MetroRail stations in the morning and in the evening from 2010-2013.

Capital Metro Concept Definition: 10% Plan

Concept Review

Based on Capital Metro's operational requirements and the results of initial stakeholder engagement initiated in 2014, five concept designs were developed for the future of the Downtown MetroRail Station in order to address the issues surrounding the existing end-of-line transit facility:

- *Concept 1* provided two separate platforms and two tracks for each platform with boarding and disembarking from three sides of the two platforms while maintaining a single travel lane for automobiles on Fourth Street between Trinity and Red River with a track crossover placed between the two platforms.
- *Concept 2* expanded the current station to include an additional platform served by three tracks while the platform would preclude continued auto passage on Fourth Street between Neches and Trinity.
- *Concept 3* implied the closing of Fourth Street to automobile traffic between Red River and Trinity with the new station having up to three platforms with boarding and disembarking for three tracks. A pedestrian plaza would be located on Fourth Street between Neches and Trinity while Fifth Street would change from a one-way street to a two-way street for automobile traffic.
- *Concept 4* is similar to concept three except that the Lance Armstrong Bikeway would be relocated from the southern side of Fourth Street to the northern side. This design would preserve limited vehicular access along Fourth Street.
- *Concept 5* is sited on an undeveloped parcel of land on the southeast corner of Fourth and Red River Streets and includes three tracks served by two platforms.

Through Capital Metro's public engagement and stakeholder meetings, Concept 3 was chosen as the preferred design.

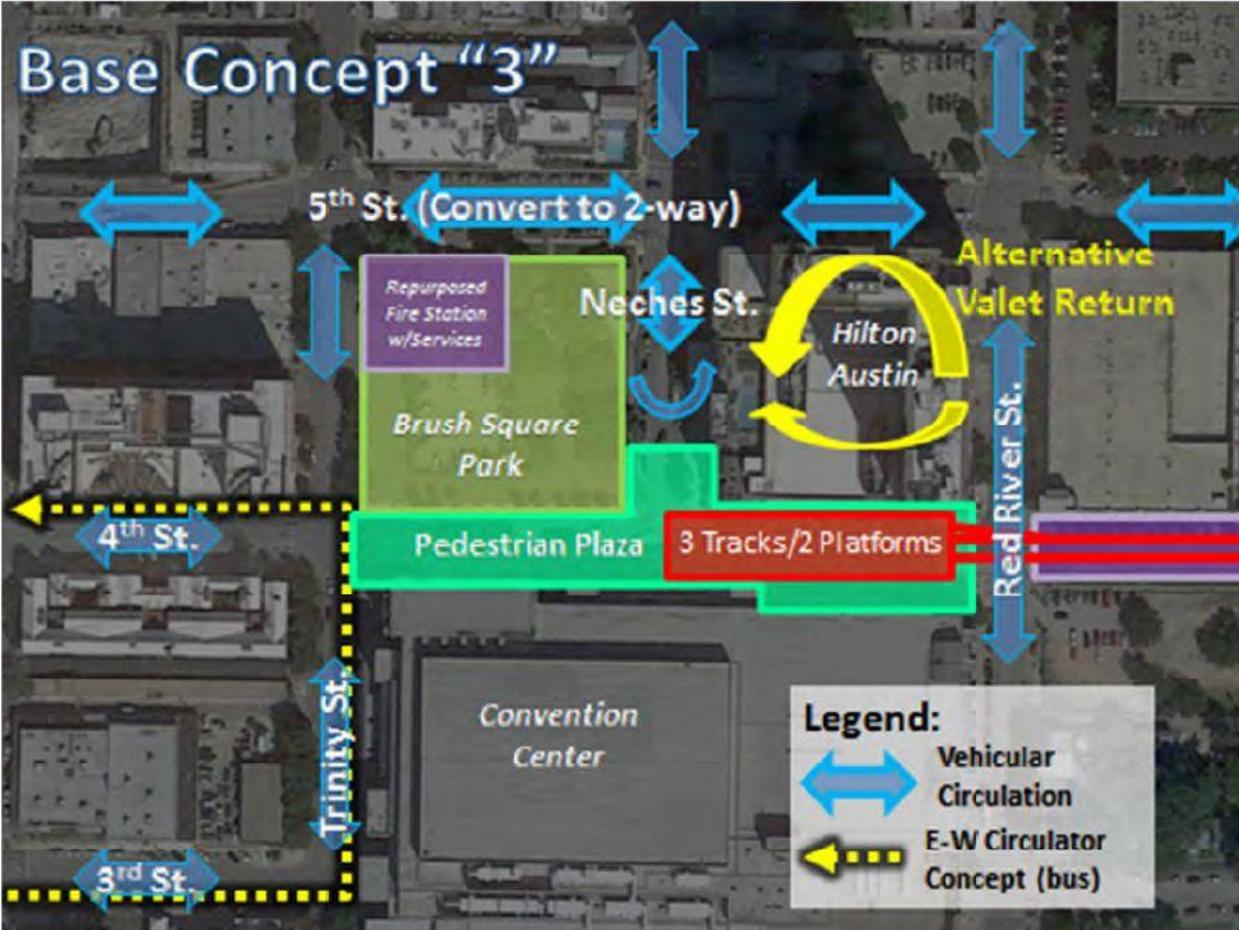


Fig. 7 shows the design of Concept 3 with proposed traffic circulation and plaza location.

Stakeholder Engagement

The development of the Downtown Multimodal Station project included three rounds of stakeholder workshops, one-on-one interviews with stakeholders, and technical analysis of various aspects of the station's requirements. Three rounds of stakeholder workshops were held in 2014 with individual interviews with stakeholders conducted continuously throughout the process. The first stakeholder workshop and interviews informed the development of the functional requirements and outlined initial concerns for the new Downtown MetroRail Station. The second stakeholder workshop and additional interviews led to the definition of the station's concept and the development of stakeholder criteria. The third stakeholder workshop and final interviews resulted in concept three being chosen as the best fit for addressing the stakeholder-defined criteria while meeting the most requirements and constraints.

Technical Design Report: 30% Plan

Following stakeholder visioning and concept evaluation work in 2014, additional stakeholder engagements and extensive proof-of-concept efforts were performed during the summer and fall of 2015. Over 60 meetings were held with Capital Metro technical user groups, COA Departments, and other project stakeholders.

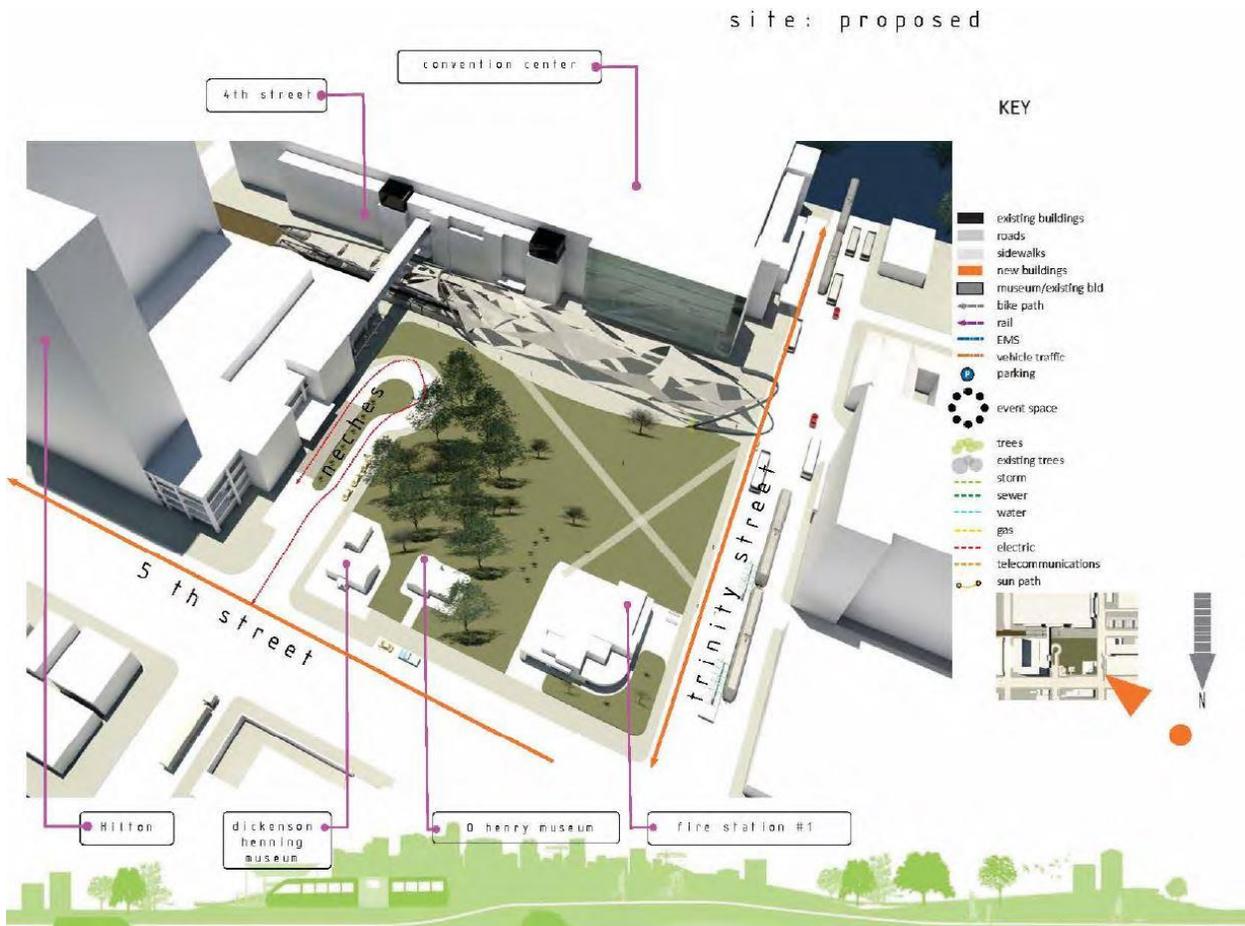


Fig. 8 shows the concept design from the Capital Metro Concept Definition report.

Concept

The new metro rail station will be relocated from near 4th and Trinity Street to 4th Street between Neches and Red River Streets. The station configuration will be three tracks served by two platforms. The two new platforms will have sufficient length to support a two-vehicle train. The platforms will be level with adjacent sidewalks by depressing the tracks below existing grade. 4th Street will be closed to motorized vehicular through traffic between Red River and Trinity Streets. The 4th Street Right of Way from Neches to Trinity Streets will be redeveloped as a pedestrian plaza providing circulation and public event space between the Convention Center, Brush Square, and the Hilton Austin. The 4th Street Waller Creek Bridge will be replaced to accommodate new tracks. There will be a minimum of two new bus “bays,” including concrete bus pads, on the east curb of Trinity Street to account for local bus circulation and to facilitate transit integration. A designated curbside area for the displaced Car2Go car-share service and B-Cycles will be identified.

The “marquee” architectural canopy over the plaza concept was removed from the Downtown Station project scope due to lack of funding.

The station was designed to meet the near-term goal of supporting 15 minute headways on the MetroRail starting around 2018, while still being able to support longer term goals of a 5 minute terminal headway on multiple routes.

The Downtown Station project will require utility relocations, drainage, grading, paving, and related civil street and site work in the project area. Another component of the project includes the replacement of the existing 4th Street vehicular bridge with a new bridge that accommodates an additional track, a sidewalk, and an improved vehicular lane over Waller Creek.



Fig. 9 is an artistic rendering of the current layout of the Downtown Metro Rail Station.

Site Design

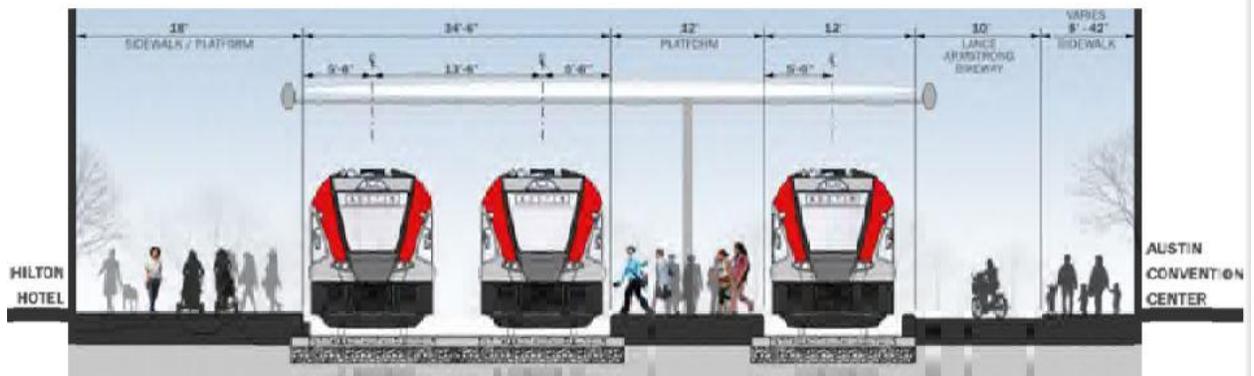


Fig. 10 contains additional images of the Concept 3 design. These dimensions do not match current designs.

Landscape Design



Fig. 11 shows the signature canopy proposed in the original Concept Definition report from CapMetro. The canopy has since been pulled from the scope of the Downtown Station project.

Proposed Conditions

Traffic Circulation:

Between Red River Street and Trinity Street, 4th Street is proposed to be closed to vehicular traffic with 5th Street being converted from one-way traffic eastbound to a two-way street. Operations between IH-35 and Red River Street would remain similar to today with a single lane of westbound traffic that can turn north onto Sabine Street and north or south onto Red River Street. For almost one-half block approaching Red River Street, the single lane of traffic is shared with Track 3 of the MetroRail, which will require special traffic signal coordination to separate train and automobile movements. There is a proposed cul-de-sac configuration at the terminus of Neches Street.

Truck traffic will be prohibited on Neches due to it being not wide enough to accommodate truck turns. The Hilton will have priority access in the Neches Street ROW due to the heavy pedestrian traffic to and from the hotel. Fire truck access will be by the controlled-access fire lane that traverses the proposed pedestrian plaza from Neches Street to Trinity Street with a mountable curb at the southern terminus of Neches Street and the eastern curb on Trinity Street to allow fire trucks to enter the plaza from the north.

Drainage:

The existing drainage system consists primarily of curb inlets and reinforced-concrete pipe (RCP) stormdrain and is undersized for the area. The proposed Capital Metro Downtown Station project will not be able to connect to the existing stormdrain system.

The proposed improvements require reconfiguration of the existing collection system of curb inlets. The proposed Downtown Station plans include area inlets in the pedestrian plaza, in-track trench drain inlets within the recessed tracks between Neches and Red River Street, and curb inlets throughout.

Utilities:

The existing underground utility infrastructure in 4th Street consists of public and private utilities, including water, wastewater, gas, electric, chilled water, telecommunication cable, and telecommunication fiber optic lines. In general, wet or pressurized utilities such as gas, water, and sewer cannot be located parallel under the railroad tracks where any repairs or other problems would cause significant impacts to the service and difficulty in accessing the line for repair. Therefore, gas lines in the project area are documented as abandoned and no relocations are identified at this time.

Because CMTA's planned loading exceeds the available Austin Energy service, CMTA's electrical system requires the installation of a new services vault. Further plan reviews with Austin Energy will be needed to confirm the actual required dimensions. A critical component to Austin Energy allowing the vault to be located in the Convention Center property is that a CMTA easement be provided at the vault location due to Austin Energy design criteria forbidding the connection of any electrical facilities across property lines. The existing Austin Energy service vault will be relocated at the request of Austin Energy from its current position due to the close proximity to the tracks and trench, which will prevent a cable pulling truck from accessing the vault; however, the existing duct bank is assumed to remain where it is. It is anticipated that the major fiber optic duct banks can be maintained in place and incorporated into the station platform structure.

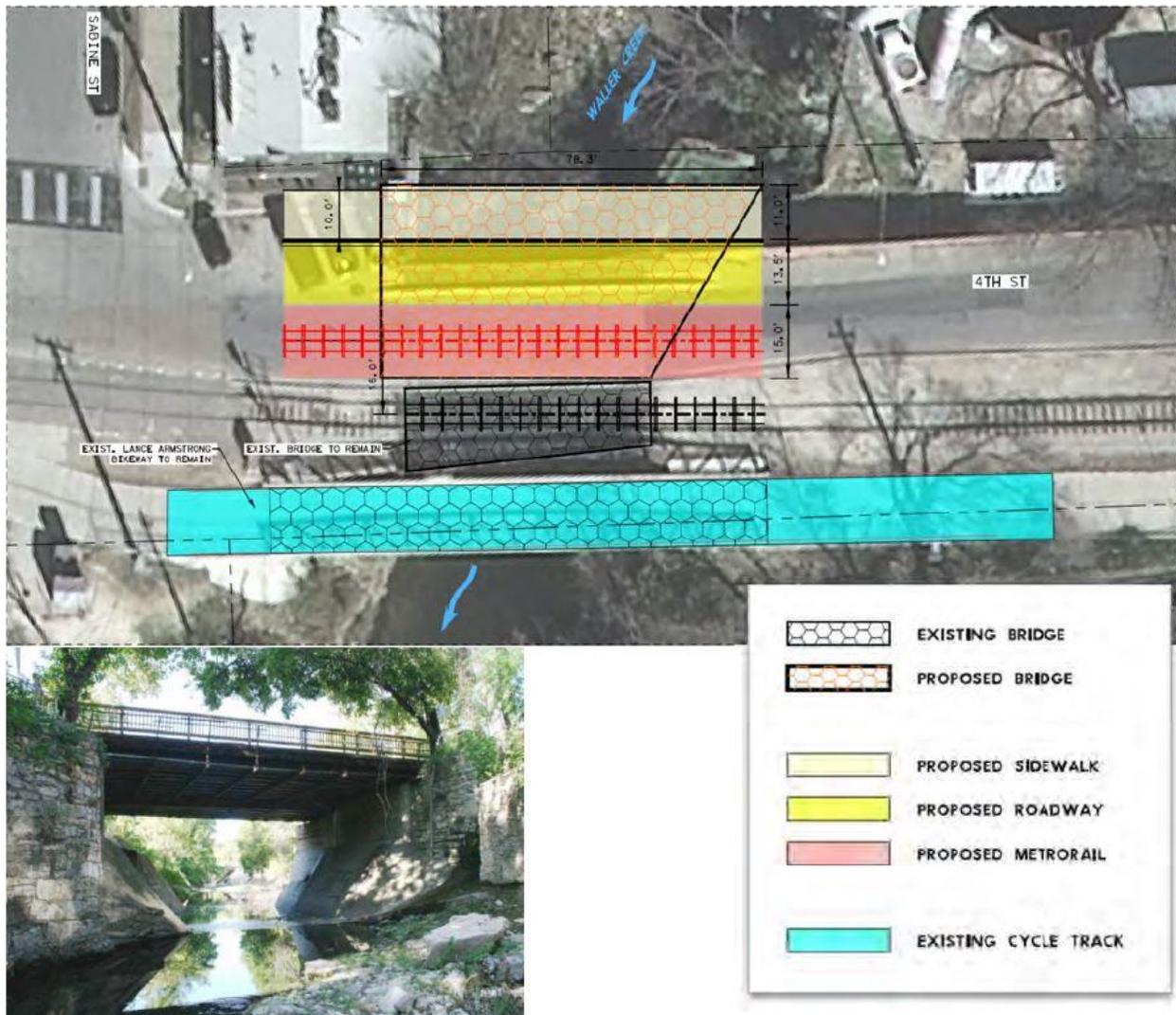


Fig. 14 shows the designs for the Waller Creek Bridge Replacement.

Waller Creek Bridge Replacement:

The existing 4th Street bridge over Waller Creek carrying vehicular traffic is proposed to be replaced with a new bridge that will carry westbound 4th Street traffic, an additional rail line into the Downtown Station, and pedestrian accommodations. The existing rail line is carried by an independent bridge structure at Waller Creek and will remain in place as part of the Downtown Station project. The Lance Armstrong Bikeway also runs parallel to 4th Street and is carried on a third independent bridge structure at Waller Creek and will remain in place. The new bridge requires continued coordination with the appropriate City of Austin Departments and the Waller Creek Conservancy to accommodate the floodplain requirements, utility relocations, and vertical clearance beneath the bridge as well as to consolidate bridge abutment and wing wall tie-ins. CapMetro will also work with the private property owners of a nearby retaining wall that is in disrepair to find a solution before the construction of the new bridge and the potential for further damage.

CONTEXT

Imagine Austin

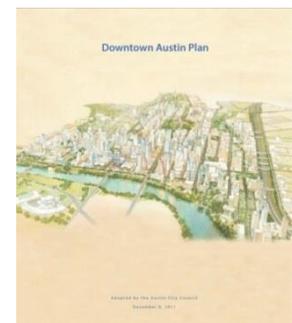
Adopted in mid-2012, the Imagine Austin comprehensive plan envisions an Austin that is livable, connected, and equitable. It outlines a structure for future growth that emphasizes compact, connected, and sustainable development. As a hub for Central Texas, many jobs, services, and amenities are concentrated in Austin; however, Austin also functions as part of a growing mega-region spanning from Dallas/Fort Worth to San Antonio to Houston. Imagine Austin emphasizes our responsibility to work together to better develop coordinated strategies for moving forward as a region. The vision for Downtown Austin consists of a safe and vibrant day and night time urban space with something to offer to residents, workers, and visitors alike.



Among the recommended policies that Imagine Austin set forth are the development of accessible community gathering spaces, the enhancement of the downtown business district, and the integration of the arts into development. Key actions for downtown include improving traffic flow in the area, prioritizing investment in mixed-use development and multimodal transit, expanding transit services and creating inviting and convenient public spaces at stops and transit centers, including complete streets principles in all new construction, and ensuring coordination across City Departments and partners for transit options.

Downtown Austin Plan

Downtown is everyone's neighborhood. The vision stated in the Downtown Austin Plan is to develop a sustainable, interconnected, and unique downtown with amenities for all and a sense of place that is unique to Austin. It cites a need for a multi-modal transportation system that is both convenient and affordable and presents viable alternatives to the automobile. The Downtown Austin Plan also states a goal of preserving and maintaining a rich geography of historic places, buildings, and landscapes that tell the unique story of Austin over the past 200 years. The plan calls for the initiation of a new generation of downtown signature parks, an advancement towards developing our urban rail system, and an investment in the downtown infrastructure.



The Downtown MetroRail Station falls within the Core Waterfront District with aspects of the project's boundaries also within the Waller Creek District as defined in the Downtown Austin Plan. The goals for those areas include improving the pedestrian experience and providing convenient transportation alternatives to getting around without a car, restoring the historic squares, and providing more opportunities for community-wide events and recreation that make downtown more welcoming to all.

Historic Context

Brush Square is one of the three remaining historic public squares in downtown Austin from the original 1839 city plan, the other two being Republic Square and Wooldridge Square. All three of the squares are owned by the State of Texas and leased to the City of Austin to use the parks with the City's Parks and Recreation Department managing and maintaining them. Brush Square is bounded by East Fifth Street to the north, East Fourth Street to the south, Neches Street to the east, and Trinity Street to the west. Although Brush Square is dedicated parkland, it is home to several existing structures: the Austin Fire Station #1 and parking lot, the O. Henry House/Museum, and the Susanna Dickinson-Hannig House/Museum. The MetroRail line, surrounding buses, the Hilton taxi stand, and the Lance Armstrong Bikeway all come together to make Brush Square an important transportation hub, bringing frequent activity and giving many visitors their first impression of downtown Austin.



Fig. 15 shows the existing layout of Brush Square Park from the Downtown Parks and Open Space Master Plan.

Fig. 16, 17, 18 below show the O. Henry House, Susanna Dickinson House, and the Austin Fire Station #1.



Surrounding Development

Transit Services:

Existing: There are 6 bus stops within a 5 minute walk of the current Downtown Station serving 6 different bus routes across the city:

- 4 | Montopolis: weekday service every 30-35 minutes
- 100 | Airport Flyer: weekday service every 25-30 minutes
- 122 | Four Points Limited: once a day on weekdays only
- 17 | Cesar Chavez: weekday service every 15-25 minutes
- 21 | Exposition: weekday services every 30-45 minutes
- 22 | Chicon: weekday services every 30-25 minutes



Fig. 19 shows a map of the transit services in the area around the Downtown Station.

Future: In general the Connections 2025 Transit Plan focuses on creating a fast, frequent, simplified and more connected system. The proposed network will remove duplicative service, eliminating certain routes or large segments of service in order to reinvest resources into higher frequency. The service around the station will be tailored to provide a last mile connection to commuter rail users with Circulator Routes servicing short distances. By focusing on frequency, many new routes could operate at 15 minutes or better, with others at 30 minutes. Ideally, these service improvements will be in operation when the new downtown station opens for service.

Capital Metro is preparing to adopt an update to the System Plan (Connections 2025) at the end of 2016. Preliminarily, the following services are planned to operate adjacent to the area or within a 5 minute walking distance:

- 2 | Rosewood : weekday service every 15 minutes
- 6 | East 12th: weekday service every 30 minutes
- 7 | Duval : weekday service every 15 minutes
- 10 | Red River : weekday service every 15 minutes
- 17 | Cesar Chavez : weekday service every 15 minutes
- 450 | Congress Circulator : weekday service every 10 minutes
- 451 | Downtown Circulator : weekday service every 10 minutes
- 804 | MetroRapid (7th St Corridor) : weekday service every 10 minutes
- 171 | Oak Hill Flyer : weekday peak service
- 990 | Manor/Elgin Express : weekday peak service

Austin Convention Center

The Austin Convention Center has a convenient downtown location between the shores of Lady Bird Lake and historic Sixth Street. The Austin Convention Center serves a wide variety of users throughout its annual events calendar including conventions, trade and consumer shows, and a variety of local public events its most notable event being South by Southwest (SXSW). The convention center spans over six city blocks and totals over 88,400 square feet of space with 368,980 square feet of meeting and exhibit space.

The Austin Convention Center opened in July 1992 and was expanded in May of 2002. The center is owned and operated by the City of Austin and managed by the Austin Convention Center Department. In March of 2015, the convention center released its Long-Range Master Plan for the facility.

The Austin Convention Center desire is to create a destination district in the downtown area with the convention center serving as the anchor. The Long Range Master Plan illustrates a best-case scenario for the expansion of the Convention Center's facilities, public/private development of the Convention District and improvements to existing infrastructure. The Convention Center's continued success positively impacts the tourism and hospitality industry, which ultimately contributes to building a vibrant, resilient, and diverse economy, as envisioned by the City of Austin's Imagine Austin comprehensive plan.



Fig 20. Austin Convention Center



Fig. 21: The existing Downtown Station with views of the Austin Convention Center and Brush Square Park.

Lance Armstrong Bikeway

The Lance Armstrong Bikeway, or LAB, is a dedicated bike path traveling east-west through downtown Austin along 3rd street from Shoal Creek to Trinity Street and continuing east on 4th street adjacent to the Convention Center and under IH-35. The bikeway extends 4.6 miles with links to surrounded trails that traverse the city.

The bikeway maintains an average of roughly 1100 bicyclists on weekdays with maximum daily counts surpassing 5,000 bikers. The LAB also has an average of about 1,000 daily pedestrian users with maximum daily counts surpassing 17,000.



Fig. 22 is a map of the Lance Armstrong Bikeway.

Fig. 23 and 24 are pictures of bicyclists on the LAB near the Downtown Station.

Amenities

A quick look into the surroundings within a 5 minute walk (1/4 mile) of the Downtown Station:

- 900+ residents
- 5,500+ hotel rooms
- connection to 16+ miles of trails and bikeway
- 100+ restaurants, coffee shops, and bars combined
- 30+ shops for clothing retail, art, books, and more

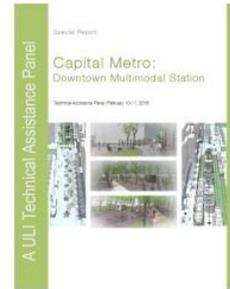


Fig. 25 is a map of the area from the Downtown Austin Plan.

DEVELOPMENT CONSIDERATIONS:

Urban Land Institute Capital Metro Multimodal Station Technical Assistance Panel

In February 2016, the Urban Land Institute (ULI) completed a technical assistance panel review for the Downtown Metro Rail Multimodal Station. The conclusions and recommendations for the project from the report include:



1. Improve pedestrian safety with modifications to the Lance Armstrong Bikeway.
2. Create a “Marquee” experience (in coordination with enhancement of City of Austin owned Brush Square) with distinctive design elements and a range of amenities within the Pedestrian Plaza.
3. Investigate potential access and traffic issues resulting from the project.
4. Maintain open communication about the project with the public.

In addition, ULI also made recommendations outside the scope of the downtown station in the interest of long term use and adaptation of a new, more permanent Station:

- Determine the COA lead who will champion the development of this area.
- 5th Street needs to become a two-way street for automobile traffic.
- Advocate for enhanced collaboration with adjacent properties.

Brush Square Park

The Downtown Parks and Open Space Master Plan was created as part of the Downtown Austin Plan with a more detailed approach to downtown public parks. The plan considers Brush Square among the highest priority projects. The vision stated for the park is that of a nature refuge for city people as well as a cultural center for downtown neighbors and visitors. The plan also states that Brush Square should be able to function as a casual respite and refuge on a daily basis and should not prioritize occasional large scale events.

The specific recommendations for Brush Square were to:

- relocate the Fire Station and repurpose the fire station building into a community-oriented building such as a café and museum
- remove the fire station parking lot and create a multi-use open lawn in its place
- create a kiosk terrace with space for affordable and quick food vending
- construct a raised deck to protect the heritage trees in the park
- implement Great Streets sidewalks and street trees



Fig. 26 shows the concept design for Brush Square Park from the Downtown Parks and Open Spaces Master Plan.



Austin Convention Center Expansion

In response to the needs expressed by the center's stakeholders as well as a desire to remain competitive for attracting more trade shows and large events, The Austin Convention Center has proposed options and future development scenarios to complete a major expansion project for the facility. The Long Range Master Plan recommended expansion strategy represents an opportunity to advance its goals for being a leader in the convention and event industry.

The preferred design for the expansion would extend westward across Trinity Street, though non-contiguous, so as to allow traffic circulation on Trinity to remain open. A pedestrian bridge connecting the two stand-alone structures across Trinity Street is also being proposed. While the building's ultimate design is not yet determined, the LRMP's conceptual new building would include two levels of exhibition space, nearly doubling the current square footage of exhibition space. The proposed expansion would provide the type of flexibility that will allow the Convention Center to schedule bigger events as well as host concurrent and overlapping events.

The preferred expansion option would include two levels of exhibition space for the Convention Center and increase capacity to over 447,000 square feet. The option would also increase meeting space for a total of 120,800 square feet and a new 56,700 square foot ballroom would be added. The proposed concept would include below-grade parking in order to reduce the overall height of the facility.

These increases in exhibition and meeting space are a direct response to the needs expressed by the Convention Center's stakeholders, as well as to Austin's main competitors for trade shows and events. This proposed expansion would pose minimal disruption to activities in the existing facility during its execution with the primary points of disruption being the underground excavation along Trinity Street to accommodate the new below-grade loading docks and parking levels, and the construction of the pedestrian bridges that would connect the expansion to the existing Convention Center.

Lance Armstrong Bikeway

Given that the LAB currently extends along 4th Street just behind the current Downtown Station and next to the tracks, the bikeway will run on a detour route throughout the construction process. ATD and CapMetro will coordinate with the bike community to ensure a safe and comparable route is designed.

There is a concerning “pinch point” where the station platforms and tracks pass between the Hilton Hotel and the Austin Convention Center. There have been major concerns expressed for the flow of pedestrian and bicycle traffic in this narrow passage. To mitigate this and other right-of-way constraints, Austin Transportation Department has indicated that the sidewalks on both the north and south edge of the street right-of-way should be provided as 10 foot clear pedestrian zones. The Lance Armstrong Bikeway could be narrowed to 10 feet, which would leave a maximum of 50 feet remaining for transit use. Capital Metro is currently evaluating this redesign request.

Austin Transportation Department Traffic Circulation Study

A separate traffic engineering study of the potential impact of closing portions of the 4th Street corridor to private vehicular traffic and the conversion of 5th Street to two-way access between IH-35 and Brazos Street has been completed by Austin Transportation Department. That study is provided as an attachment to this report.

In summary, conversion of 5th Street to two-way travel between IH-35 and Brazos Street provides significant traffic congestion reduction, especially during times when East 6th Street is closed for safety or for special events. With the conversion of 5th Street the impacts of closing and managing the various blocks on 4th Street are not significant. The proposed revision of the street grid in this portion of downtown does not cause significant impacts to the travel patterns. The analysis suggests significant benefit from the conversion of 5th Street and therefore it is recommended to occur prior to modification of 4th Street and before substantial construction of the proposed station.

Interlocal Agreement (ILA)

An Interlocal Agreement between the City of Austin and Capital Metro is currently being negotiated and will be approved by the Austin City Council and the Capital Metro Board of Directors.

Sabine Street Promenade

Concept

Sabine Street is undergoing improvements as part of the City's Sabine Promenade project to create a curbside "festival street" concept between 4th and 6th Streets and create a barrier-free environment that gives pedestrians the priority while constraining the flow of vehicle traffic to increase safety for non-motorized traffic. The southern limits of the project are the curb returns at 4th Street; however, grading and drainage needs cause overlap between the Sabine Promenade design and the Downtown Station project. CapMetro recommends reducing the scope of the Sabine Promenade project to avoid making major adjustments to the grade of the street. They also suggest constructing a temporary pavement transition within Sabine Street north of the intersection of 4th Street and Sabine Street.

Development Timeline

The timing of the construction and the scope limits of the Sabine Promenade project need to be considered. Businesses and facilities along 4th Street and on Sabine Street, including the Austin Energy chilled water plant on Sabine Street require vehicular access from 4th Street to be maintained during and after construction. Construction is proposed to be phased separately to the east and west of Sabine Street so that there will always be roadway access to Sabine Street on 4th Street either from I-35 or reverse-flow from Red River Street.

The project is currently at 100% design and awaiting Texas Department of Transportation approval to advertise. The project is currently scheduled to begin construction in February 2017 and will be phased to complete work in the 400 block of Sabine Street in order to be clear of conflict with the CMTA Downtown Station project starting in mid-2017.

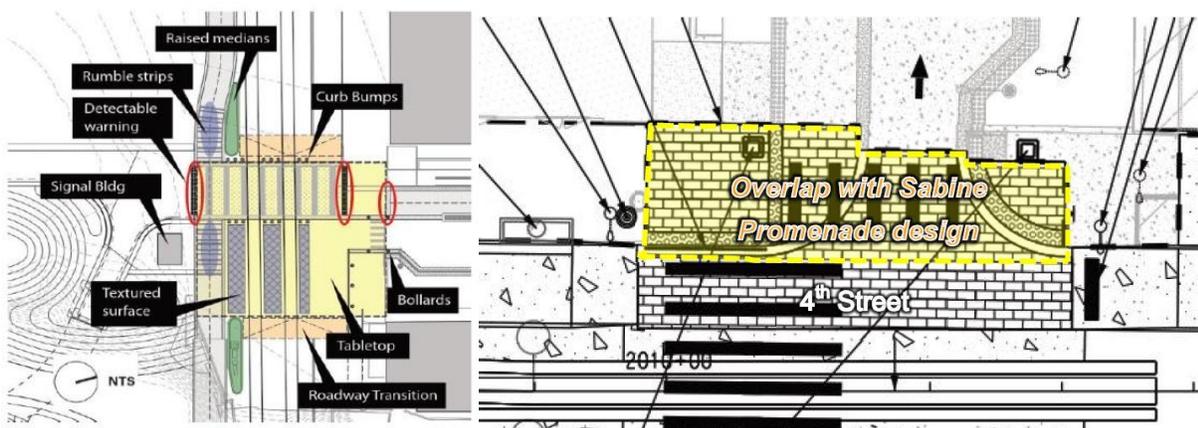


Fig. 30 and 31 are images of the Sabine Street Promenade designs.

Drainage

The existing 30 inch stormdrain line located in 4th Street does not have sufficient capacity. Capital Metro has two options regarding stormwater conveyance:

- 1) Improve the existing 30 inch stormdrain to a 42 inch stormdrain from 50 feet west of the intersection of Neches Street and 4th Street to approximately 100 feet east of the intersection of Red River at 3rd Street to connect to an existing 66 inch diameter stormdrain line.

- 2) Construct a new stormdrain system with City cost participation to provide a new stormdrain system that will meet current design criteria.

The City of Austin, Watershed Protection Department (WPD) continues to work with Capital Metro to determine the best solution for stormdrain improvements as part of the Downtown MetroRail Station project.

Transit Plaza

Due to the closure of 4th Street to auto traffic, a public plaza will be created from the western edge of the Downtown Station to the right of way on Trinity Street. This plaza will neighbor Brush Square Park, the LAB, and the Convention Center. The plaza will extend the width and length of the existing right of way (roughly 80ft by 250ft) and will actually remain ROW and reserved for transit and pedestrian use so as not to relinquish the land from City control.

Capital Metro will require queuing space on the eastern edge of the plaza near the boarding platforms and ticketing station. The Austin Fire Department requires a 25' open fire lane through the plaza space so as to maintain access to the Hilton, the northern edge of the Convention Center, and Brush Square. There is an Austin Energy electrical duct on the southwestern corner of the space that could prevent planting trees or otherwise going beneath the existing grade in that corner. Within those parameters, Capital Metro intends to design and build a basic and flexible plaza that would not preclude future entities from developing it at a later date.

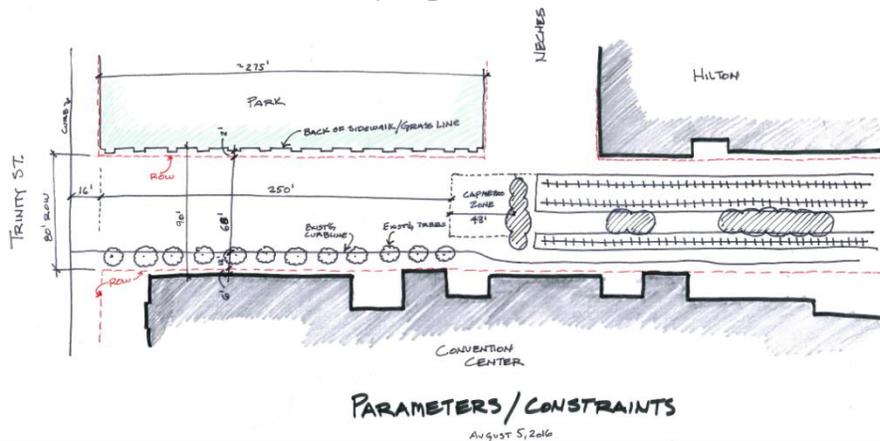


Fig. 32 shows the constraints of the public plaza space adjacent to the Downtown Station.

The Austin Convention Center Department has been designated to manage the public plaza. The plaza will remain street right-of-way and its future design will be coordinated with Austin Transportation Department, Austin Convention Center, and all affected organizations adjacent to the plaza. The Austin Convention Center has convened three workshops with multiple City of Austin departments, Capital Metro, and external stakeholders to discuss the programming of the space and design the plaza. Austin Convention Center will have the responsibility of maintaining and operating the space once completed.

Through these workshops, three preliminary concept designs for the plaza have emerged. In these workshops, there have been concerns expressed for the programming of the space as well as the relationship between the public plaza and the public park at Brush Square.

Long Term

Interstate Highway 35 – Redevelopment

Due to the age of the existing bridges, the downtown portion of I-35 must be completely reconstructed. In 2014, the Austin City Council passed Resolution No. 20140306-025 stating that “The City Manager is directed to consider the tenets of the Imagine Austin Comprehensive Plan and support I-35 alternatives that are in keeping with the compact and connected vision set forth in that plan.” There are concept designs from TxDOT that involve depressing I-35 through downtown with some options also capping the highway while adding the potential for development and green space on top. There is a growing movement to encourage TxDOT to not only depress the main lanes of the interstate, but also to rebuild all the bridges that currently cross I-35 and re-engage all historic connections across the highway while building them all to Austin’s Great Streets standards.

It is unclear the timeline of such a project; however, the redevelopment of IH-35 should be considered in the long-range plan for the MetroRail and the Downtown Station.

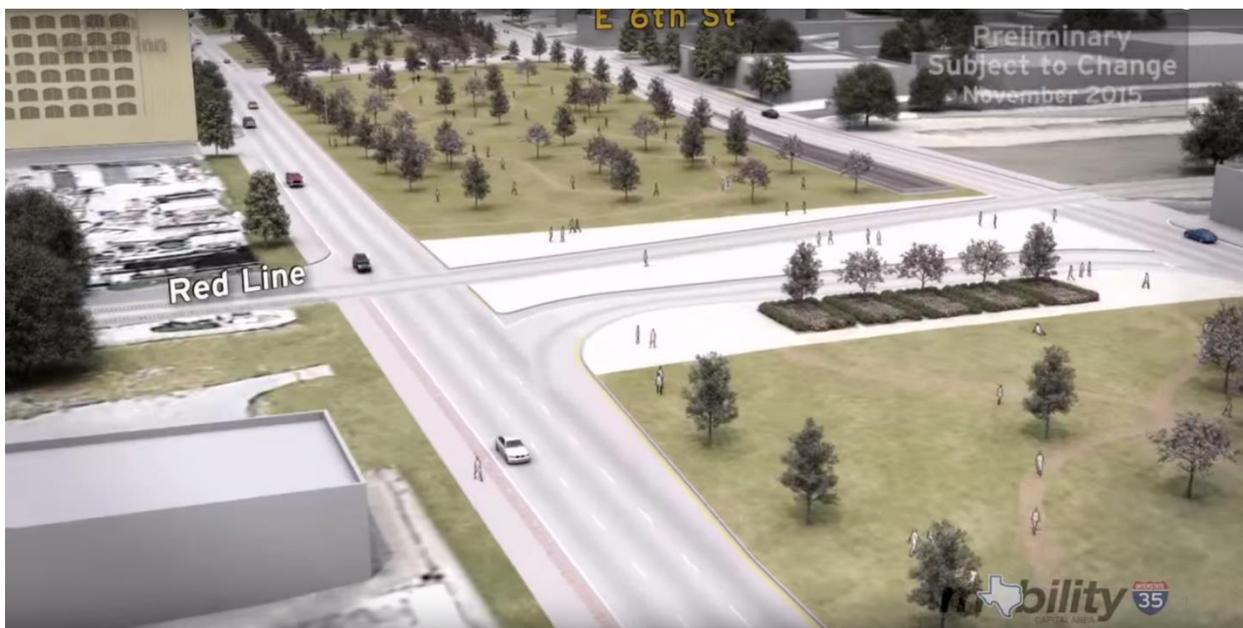


Fig. 33 shows an image from the preliminary concepts for a lowered Interstate Highway 35 through downtown Austin.

STAKEHOLDER QUESTIONNAIRES

The Planning and Zoning Department conducted a brief stakeholder survey in August 2016 in order to better understand the usage of the area surrounding the Downtown Station, the perceived boundaries of the Downtown Station project, the key concerns for the Downtown Station project, and also the ideal outcome for the project and surrounding area. The survey form used can be found in the appendix. The survey was completed by Austin Fire Department, Austin Convention Center Department, Parks and Recreation Department, Economic Development Department, Planning and Zoning Department, and Austin Transportation Department. In addition to internal City departments, the survey was completed by other external stakeholders, namely Preservation Austin, Waller Creek Conservancy, Downtown Austin Alliance, Capital Metro, and Hilton Austin Convention Center Hotel. The results of the feedback from the survey have been incorporated into the corresponding sections below.

Use of the Area

Situated in the vibrant and lively downtown of Austin, the Downtown Station area serves a wide variety of uses and users. This area is used by regular commuters and transit users, downtown residents and employees, and tourists in the local museums, hotels, and businesses. The area surrounding the Downtown Station is used for recreation, business, conventions and expos, special events, and visits to Austin's historic places. In the areas immediately surrounding the Downtown Station, people are connecting to other parts of the city of Austin and beyond via walking, biking, driving, and taking the train. Employees work in the area to accommodate convention center events, respond to fire and medical emergencies, and ensure the safety of all users. The area around the Downtown Station is activated daily with peaks during major commute hours, during conventions and expos at the Convention Center about 122 times each year, and with high volumes of visitors during special events such as South by Southwest.

Project Boundaries

The boundaries of the Downtown Station project extend further than the immediate location of the new station platforms and plaza along 4th Street west of Trinity Street due to the fact that the project's impact will reach areas just outside of that for some stakeholders and much larger areas still for other stakeholders. For some, the neighboring Brush Square, Austin Convention Center, and Hilton Hotel properties are the most significant project neighbors that will be impacted by the Downtown Station project, though for others the project's impact extends all the way from 7th Street to the North, IH-35 to the East, Cesar Chavez Street to the South, and Congress Avenue to the West.

For the purpose of the upcoming comprehensive traffic analysis, the study area encompasses most of downtown from 15th Street to IH-35 to Riverside Drive/Barton Springs Road, and to Lamar Street.

Key Concerns

Many of the key concerns that were stated in the stakeholder engagement process were echoed across multiple groups. Many stakeholders expressed concerns for traffic circulation in the area with the closure of 4th Street. Concerns were also shared about safety for pedestrians, cyclists, and transit users in such close proximity to one another. Concerns were raised about safe access between the convention center, the Hilton hotel, and the public park and plaza especially in relation to potential conflict points with the MetroRail tracks, station platforms, MetroRail passenger queuing areas, and also the Lance Armstrong Bikeway. Additionally, key stakeholders had qualms with the "pinch point" between the Austin Convention Center and the Hilton Hotel in which there are three tracks, two platforms, and a bikeway proposed to co-exist.

There was substantial attention brought to the need for a cohesive and comprehensive vision for the public realm from the public plaza to Brush Square, to the surrounding streetscapes, and even to the Waller Creek district parks. Stakeholders expressed a desire for coordination on the design and programming of the public plaza and park at Brush Square. Stakeholders also wanted clear and consistent signage and wayfinding tools for connections from Waller Creek, Hilton Hotel, Convention Center, and the public plaza and park. Multiple stakeholders have concerns about the location of queuing for MetroRail passengers in relation to the public plaza, the bikeway, and the public park.

Our feedback indicated a desire to enhance and activate Brush Square and preserve the historic resources in it, while also activating the public space for daily use by residents, tourists, business patrons, and transit users. There was also a documented need to consider accommodations for not just large events and special, private events, but also daily recreational and casual use as well, including public restrooms.

Stormwater conveyance was stated as a high priority concern in need of close attention and resolution. Other important considerations were documented such as the access to and maintenance of utilities, particularly the location of subsurface utilities in and around the Downtown Station and MetroRail tracks.

There was a clear request for coordination with the Waller Creek Government Corporation and the Waller Creek Conservancy as Waller Creek is developed and the Downtown Station interacts with the district.

Many stakeholders want the Downtown Station area to be a beautiful and welcoming space for all of its users, with street trees, street furniture, and high quality design and aesthetics.

Finally, considering that there are many proposed projects happening in close proximity to the proposed Downtown Station, stakeholders had serious concerns about the timing and phasing of construction in the area and its impact on all of the area's users.

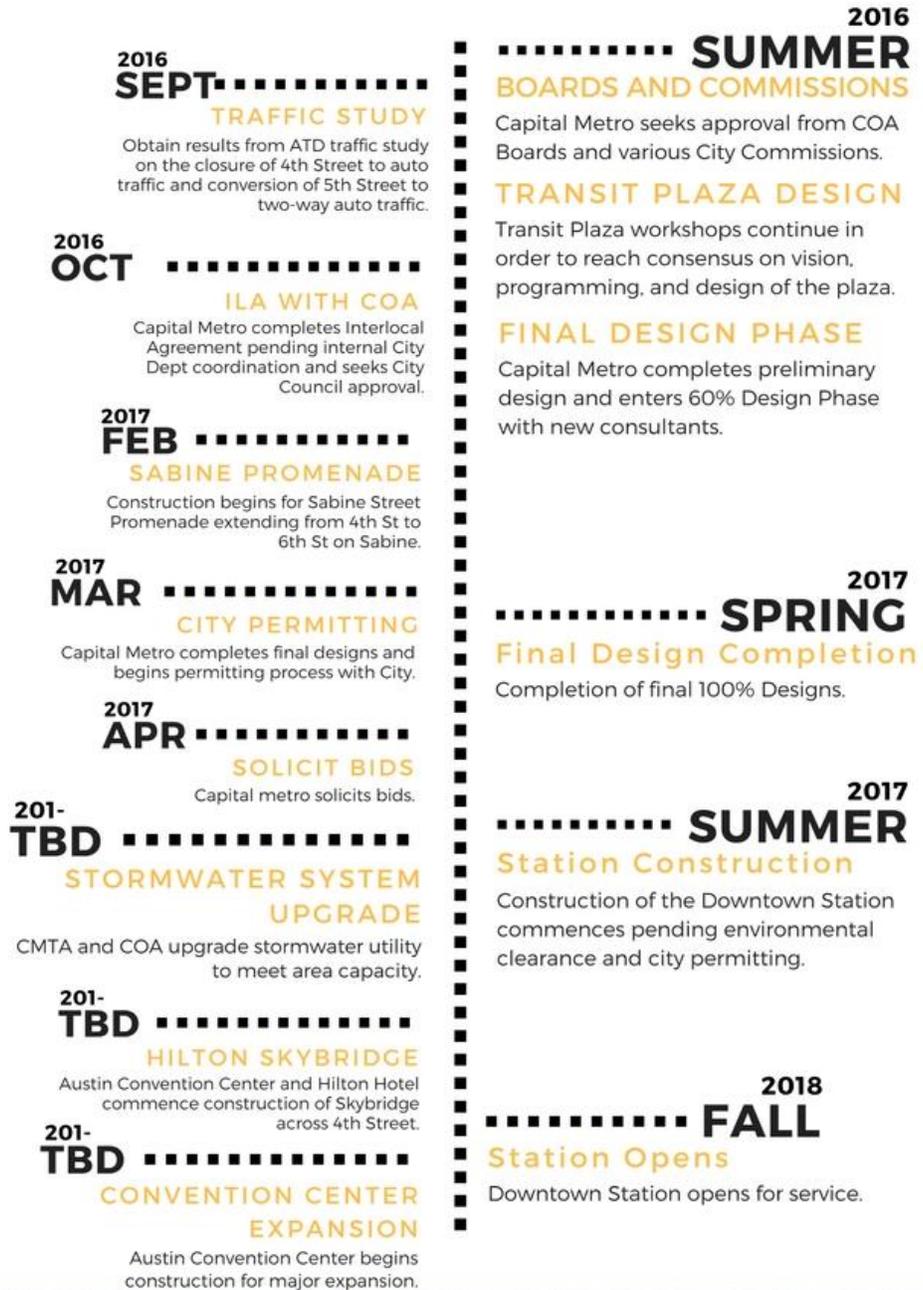
Ideal Outcomes

Several ideal outcomes for the space were shared among multiple stakeholders. Ideally the Downtown Station and surrounding areas will be beautiful and functional for all users, meet the increasing need for alternate transportation while providing safe and accessible means to do so, and be a vibrant, connected, and iconic public space for regular and occasional visitors. The desired outcomes for the area include preserving the important cultural and historic resources in the area, retaining connectivity between Brush Square, Hilton hotel, and Convention Center while also augmenting connectivity to surrounding areas such as Waller Creek trail and parks and other important public spaces. Stakeholders want to be able to relocate Fire Station #1 to an appropriate location, have appropriate stormwater utilities for the area, and mitigate the impact of road closures by phasing construction of all projects in the area.

CONSTRUCTION SEQUENCING TIMELINE



Construction Timeline



RECOMMENDATIONS

These recommendations were created by multiple City of Austin departments and are still subject to a final negotiated and City Council-approved Interlocal Agreement (ILA) between the City of Austin and Capital Metro Board of Directors.

- Establish an overall vision for the plaza and Brush Square to create a great public space for this gateway into downtown.
- Clearly communicate the long-term transit plans and options from the station moving west.
- Ensure connectivity between the station moving east and west, from IH-35 to Waller Creek to the station and west through downtown and beyond.
- Ensure safe access between the Hilton Hotel, train tracks, Lance Armstrong Bikeway and Convention Center.
- Establish a specific timeline and construction phasing between the multiple projects in the area, and continue coordination between the City of Austin, Capital Metro, and the Hilton Hotel for design and phasing of construction projects.
- Reach agreement between Capital Metro and City of Austin Watershed Protection Department for the design, timeline, funding, and construction of the stormdrain system.
- Continue coordination between the City of Austin, Capital Metro, and the Waller Creek Conservancy, and Waller Creek Local Government Corporation for design and connectivity.
- Establish timeline and resources to implement the Brush Square improvements recommended in the Downtown Austin Plan – Downtown Parks and Open Spaces Master Plan, including the relocation of Fire Station #1.
- Develop a scope and identify funding to conduct a comprehensive downtown traffic study that would encompass the Downtown Station area as well as the remainder of downtown.

APPENDIX

- A. [Austin City Council Resolution No. 20160225-045](#)
- B. CMTA 10% Concept Definition Report
- C. CMTA 30% Technical Design Report
- D. [ULI Technical Assistance Panel – Downtown Station](#)
- E. [Imagine Austin Comprehensive Plan](#)
- F. [Downtown Austin Plan](#)
- G. [Downtown Parks and Open Space Master Plan](#)
- H. [Austin Convention Center Master Plan](#)
- I. [Stakeholder Interview Questions](#)
- J. Austin Transportation Department Traffic Circulation Study



MEMORANDUM

TO: Mayor and Council

CC: Marc A. Ott, City Manager
Robert Goode, P.E., Assistant City Manager

FROM: Robert Spillar, P.E., Director, 
Austin Transportation Department

DATE: September 14fa, 2016

SUBJECT: Traffic Analysis of 5th Street/4th Street Grid
Capital Metro Downtown Station Expansion

Attached with this memorandum is a completed traffic analysis related to the proposed assignment of East 4th Street between Red River and Trinity Streets to transit, bike and pedestrian uses only. This reassignment of access characteristics is being contemplated to allow for the construction and operation by Capital Metro of an expanded downtown commuter rail station. Automobile access to 4th Street between IH35 and Red River Street will be limited to local uses only. Between Red River and Trinity Streets will be typically restricted to transit, pedestrian, and bicycle access only.

As part of the analysis, East 5th Street between IH35 and Brazos Street was evaluated for conversion to two-way operation. The configuration would allow two lanes eastbound and one westbound.

Two primary time periods scenarios were evaluated: 1) the evening commute period; and, 2) times when East 6th Street is closed for special events or for safety purposes. Safety closures of East 6th Street occur at least 3 to 4 days per week, depending upon the activities within the surrounding entertainment district.

The results of the analysis are quite positive. During the evening commute period, there is not a significant impact to the traveling public. Although the valet parking conditions at the Hilton are somewhat affected, the proposed modification of 5th Street provides a viable alternative access route. Travel times within the grid eastbound during the evening commute period are not significantly affected.

For special event times, there is a substantial reduction in congestion throughout this portion of the grid because key constraint points within the grid are eliminated or significantly improved.

Based on these findings, Austin Transportation Department engineers recommend that we proceed with design and planning for conversion of East 5th Street to two-way operation, with two lanes east bound (as is today) and one lane west bond between Brazos Street

and IH 35 and restrict the use of 4th Street between Trinity and IH35 for the appropriate modal use (transit, pedestrian, bicycle).

Other traffic revisions will likely be necessary related to parking spaces, bus stops, and sidewalks to achieve the joint City and Capital Metro vision for this area. These changes and the modification of access will be made administratively using the authority of the City Traffic Engineer. The authorization for placement of the expanded rail station within the right-of-way will be brought to Council in October as an inter-local agreement for execution.

Should you have any questions, please contact me at your convenience.



MEMORANDUM

To: Traffic Study Files

From: Lee Austin, P.E.
Traffic Management Division
Austin Transportation Department

Date: September 1st, 2016

Subject: Study of traffic impacts of two-way conversion of 5th Street from IH 35 to Brazos Street and closure of 4th Street from Red River Street to Trinity Street

Location: East 4th and 5th Streets from Interstate Highway 35 to Brazos Street



Introduction:

At the direction of Council, the Austin Transportation Department (ATD) completed a traffic analysis of the proposed E 4th St Station to be constructed between Red River St and Trinity St. The proposed plan would require that two links of E 4th St be restricted to pedestrian, bike and transit use only. The plan requires that Neches Street be terminated in a cul-de-sac at its intersection with 4th Street. Three train platforms would be constructed in 4th Street between Red River and Neches Streets. A pedestrian plaza would be constructed between Neches and Trinity Streets and would serve to handle large crowds waiting for the rail line.

To achieve the plan, vehicular traffic would be restricted from the project blocks. East 4th Street would be limited to local traffic between the SB IH35 Frontage Road and Red River Street. East of Trinity, there are no plans for modifications to E 4th St.

Several stakeholders have expressed concern, including the Greater Austin Chamber of Commerce which offices in the Hilton building, the Hilton hotel, and the Austin Convention Center. To examine these concerns, ATD conducted analysis of the existing grid configuration and also of a concept that would convert E 5th St to two-way traffic between IH35 and Brazos St as a replacement for losing capacity in the E 4th St corridor. Both the PM Peak period and a typical "Entertainment Hour" scenario where E 6th St was closed were evaluated. The Entertainment Hour scenario is of special concern to ATD as E 6th is regularly closed to vehicular traffic multiple times a week and without E 4th St, there would be no westbound access from IH35 for eight blocks from Cesar Chavez to E 8th St. These PM peak and the Entertainment Hour periods represent the highest volume periods for this portion of the grid.

Existing Conditions:

Currently, E 4th St is a one lane westbound between the southbound IH35 service road and Trinity St (four blocks); the MetroRail Red Line track is immediately south of E 4th St and the Lance Armstrong Bikeway is south of the rail. West of Trinity St, E 4th St is two way with one lane in either direction. Two blocks in from IH35, E 4th St is controlled by a signal at Red River; the signal serves as the rail crossing traffic control when a train arrives and also has a signal phase for the bikeway. At both Neches St (one block west of Red River St) and Trinity Street on the following block west, E 4th St is controlled by an all way stop. E 4th St carries relatively little traffic although the volume increases when E 6th St is closed and at those times, the queue frequently backs up from Trinity St to the IH35 service road.

E 5th St is a one way eastbound major arterial out of the downtown core and its highest traffic volumes are during the PM peak hours. Currently, E 5th St has three lanes crossing Congress which drop to two through lanes at Brazos St. Past Brazos, it varies from three to four to two lanes between Congress and the southbound IH35 service road. However, E 5th St's capacity to access IH35 is ultimately constrained by the two lanes section between Red River St and southbound IH35 service road. The SB service road does not directly access the IH35 main lanes at that point; traffic reaching the frontage road must head south and then either use the U-turn under IH35 at 4th St to head north, using the ramp to the northbound main lanes north of 8th St or travel south and use the ramp to the southbound lanes south of Cesar Chavez. Recently, an Austin Energy chilled water line project reduced E 5th St to two lanes for over three years and large congestion increases were not seen.

Proposed Conditions:

To compensate for the loss of E 4th St as a viable route into the downtown grid, ATD studied the feasibility of converting E 5th St to two way operations. E 5th St would remain three westbound lanes at Congress but would become two westbound lanes at Brazos St. From Brazos St to the IH35 service road, there would be one WB lane. The space for the WB lane would come from converting angled parking to parallel between Red River and IH35 and from the underutilized third EB lane between Brazos and Red River. The possibility of taking E 4th St all the way to Congress was considered but a model showed that three lanes of EB capacity at Congress are required to prevent adverse delay at the intersection. The impact on on-street parking should be neutral. Attachment 1 shows a schematic of the proposed lane conditions.

Data Collected:

Motor vehicle Turning Movement Counts (TMCs), pedestrian and bicycle counts were collected in the PM peak 5-6 PM, when E 5th street has heavy commuter traffic heading eastbound to IH35. Counts were also collected during weekend Entertainment Hours when E 6th Street was closed and 4th street had heavier westbound flows into downtown. The counts were collected at a total of 12 intersections for both peaks: all intersections between Brazos and Sabine on both E 4th and E 5th Streets. The AM peak for E 5th Street is relatively light compared to the PM peak and the Entertainment Hour peak and was not collected. To address stakeholders concerns,

additional traffic counts were taken at the exit to the Hilton garage on Red River St as well as the Convention Center Garage on E 5th St during the PM peak hours and Entertainment Hours.

In addition, the Austin Transportation Department's Arterial Management Division has installed Bluetooth readers on various arterials which collect travel time and speed data. On E 5th St, ATD has data between Congress Ave and Red River St from March 2015 to the present day. These travel times include periods where E 5th St was reduced to two lanes during the chilled water line construction as well as when all lanes were open. ATD also compared the model to the travel times gathered by Google maps which tracks all traffic running the Google maps app.

Assumptions:

Very conservatively, we assumed that 100% of the existing WB volume on E 4th St would use the newly created WB lane on E 5th St while half the existing volume of E 4th St would continue to use E 4th St. Turns were reassigned based on land usage; i.e. SB Neches turning WB onto E 4th St was assumed to have come from the Hilton and reassigned to NB Neches turning WB onto E 5th St.

Modeling Results:

PM Peak

The primary concern in the PM Peak is to maintain existing eastbound commuter volumes and signal progression along E 5th St exiting downtown towards IH35. The traffic model shows that this can be done with the proposed two EB vehicle lanes and the westbound lane. During the PM Peak, eastbound travel times after conversion indicate only a few seconds increase, likely due to the introduction of opposing traffic which slightly delays existing EB left turns. Travel times westbound increase by approximately 1 minute when comparing the 5th St alternative to the existing 4th St configuration. However, the WB volumes on E 4th St (150 vehicles/hr) are currently very, very low compared to the volumes carried by E 6th St (~600 v/hr) and Cesar Chavez (~800 v/hr).

The chart below shows the predicted travel times compared to the measured Google travel times. The model is very close to the measured times although the model shows shorter existing travel times on E 4th St than the real-life Google data. This is probably due to the conflicts due to parking maneuvers, pedestrians, and bicycles which are difficult to recreate in a model. As signalized intersections on the proposed E 5th St WB lane will replace the current all-way stops on E 4th St, ATD believes that there will be negligible difference in travel times between E 4th St today and WB 5th St in the proposed scenario.

In addition, the model shows that there are sufficient gaps on SB Red River St to allow egress from the Hilton garage, both for the Hilton's valet operations and the residents and workers. Currently, many vehicles exiting the garage turn right to head SB on Red River St and then right again to head WB on 4th. In the future scenario, more drivers will probably turn left when exiting the garage to either head to WB E 5th St or WB E 6th St. If after implementation, the gaps for exiting left turns are not sufficient, the signal timing at E 5th St and Red River St can be

adjusted.

Time Period	Direction	Street	Period	Travel Time (min)	Google Travel Time (min)
PM Peak	WB	6th St.	Before	2.0	2 Min.
		C.Chavez	Before	3.7	2-6 Min.
		5th St.	After	3.6	NA
		4th St.	Before	2.4	4 Min.
	EB	5th St.	After	2.1	NA
			Before	2.0	3 Min.

Entertainment Hours

Queues along the frontage road from E 4th St routinely back up and block eastbound trips on 5th St. at the Frontage Rd., causing a subsequent backup on 5th St. Likewise, trips entering the grid on 4th St often try to turn north on Red River, Trinity and Brazos Sts where they run into road closures or the traffic congestion backing up along 5th Street. This condition results in circular congestion where each link in the grid is “locked” by the congestion of the intersecting street, thus nothing moves (e.g., gridlock). Conversion of one lane on 5th St to provide westbound capacity between the Frontage Rd. and Brazos eliminates the potential for circular congestion because the traffic displaced from 6th St. is able to use the 5th St. westbound lane before blocking the eastbound 5th St. traffic stream. Because all the intersections along 5th Street are signalized, this street is better able to handle the volume and flow of westbound traffic as compared to the numerous stop-signed intersections on 4th.

The chart below shows that travel times are improved immensely by adding the WB lane to E 5th St and preventing the gridlock that routinely occurs today.

Time Period	Direction	Street	Street and Direction	Travel Time (min)	Google Travel Time (min)
Entertainment Peak	WB	5th St.	After	3.5	NA
		4th St.	Before	11.8	5-9 Min.
	EB	5th St.	After	1.4	NA
			Before	14.8	3-7 Min.

Bluetooth Travel Time Data

E 5th St provides a fascinating real life test scenario of the proposed conditions. From March 2013 until the first week of March 2016, E 5th St was reduced to two lanes between Brazos and Red River for construction of the AE chilled water line. Looking at average travel times over the peak hour for each month, there is no more than a 20 second difference in travel times. The sole exception was during October 2015 which saw a 35 second difference which was very probably due to special events such as Formula 1 as well as some construction that temporarily required the use of the parking lane for a travel lane. Although the 20 second delay is higher than the less than 10 second delay the model posits, some of the difference may have been the inherent driver confusion during temporary traffic control situations.

Impacts to Local Stakeholders:

Of special consideration is the potential impact of the E 4th partial closure on the Hilton, north of E 4th St between Neches and Red River. The Hilton's drop-off area is on Neches and its parking garage entrance is on Red River. Currently, when a valet operator is returning a car to the drop-off area, he or she exits onto Red River heading south, turns right onto WB E 4th St and right again to head NB on Neches. If E 4th St is closed between Trinity and Red River, this movement will no longer be possible and, during the E 6 St Entertainment Hour closures, would result in an unacceptably long detour. Under the proposed scenario, the valet operators will be able to exit the garage onto Red River to head NB, turn left onto E 5th St WB, and left again at Neches. Although the modeling results show that the Hilton garage exit will operate at an acceptable level, if the gaps on Red River St are not sufficient to allow left turns from the Hilton garage, ATD can adjust the signal timing. However, during the Entertainment Hours, access to the Hilton Garage will be enhanced as the WB lane on E 5th St provides an additional route.

Another valet stand is located on the NE corner of E 5th St and San Jacinto at the Westin. During the site plan approval phase, the developer was informed that they would not be able to have a valet stand on E 5th St and they would need to plan for one on San Jacinto. After they agreed, circumstances changed during the AE waterline project and ATD was able to allow a valet on E 5th St. Currently during the E 6th St Entertainment Hour closures, the Westin valet heads EB on E 5th St, north on Trinity (APD will allow them in the barricades), and then uses the alley to cut over to San Jacinto. In the proposed scenario, the valet operator will have WB access and need to circle the block down San Jacinto to 4th to return to Trinity.

An additional local stakeholder is the Austin Fire Department station located on E 5th St at Trinity St. During the special events and the Entertainment Hours, the proposed conditions will both relieve existing congestion and give the fire station more reliable access. The addition of a WB lane on E 5th St will also give the fire station more response route alternatives.

Conclusions:

The modeling shows that adding a WB lane to E 5th St will add only a small delay to the EB PM peak commuter traffic. The limitations on the capacity of E 5th St are due to the conditions at

the SB IH35 Service Road, not the number of lanes at the signals west of IH35. This is consistent with observations during the PM peak and during SXSW when the traffic volumes on 5th St are much heavier than any other time of year. In addition, the long construction phase of the Austin Energy chilled water line has conveniently served as a real life “test case” and proven that E 5th St can function with no increase in delay with only two lanes.

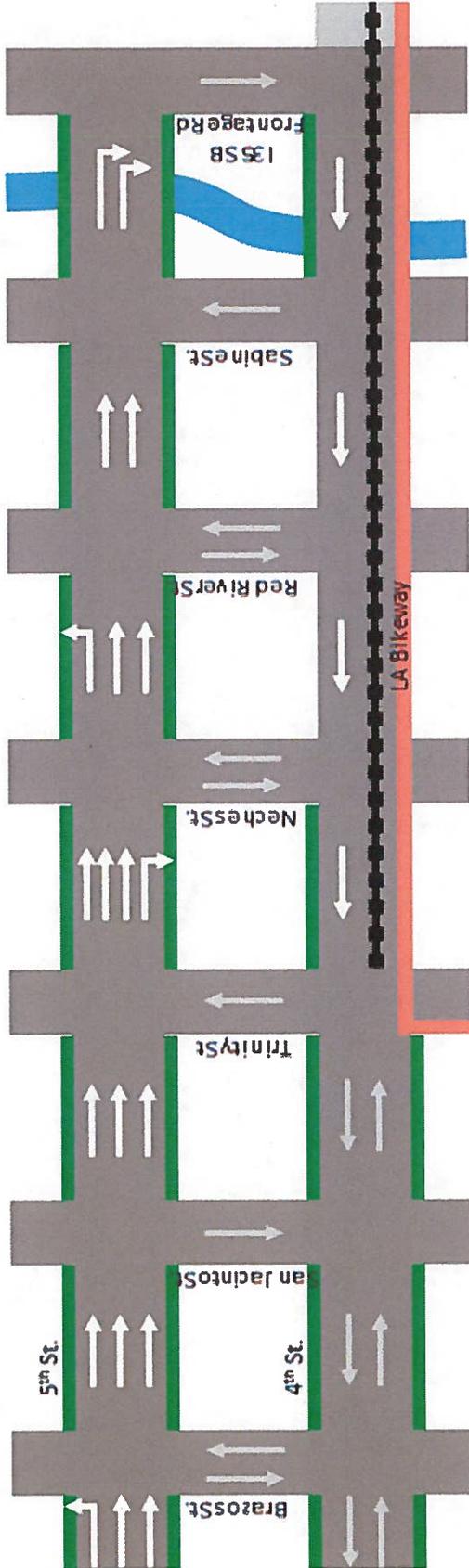
The WB lane on E 5th St will provide another route in the downtown core from IH35 and will more than adequately take care of the traffic from E 4th St. Currently, WB traffic on E 4th St is constrained by several stop signs (at Neches, Trinity, and San Jacinto) which limits the number of vehicles per hour and leads to very long queues during the Entertainment Hours when E 6th St is closed. The late night queue from E 4th St often backs up onto the SB IH35 Service Road and actually prohibits E 5th St from exiting. If that traffic now uses the WB lane of E 5th St, that conflict is eliminated. In addition, it is a well-documented engineering principle that a traffic signal can handle more vehicles per hour than a stop sign; the potential WB volume is actually increased under the proposed scenario.

Based on our analysis and observations, adding a WB lane to E 5th St will not significantly degrade EB traffic and will substantially enhance WB access to local businesses. Based on the very large improvement for the Entertainment Hour access, even if the proposed Capital Metro downtown station were not to implemented and E 4th St would remain open, ATD would still recommend adding a WB lane to E 5th St.

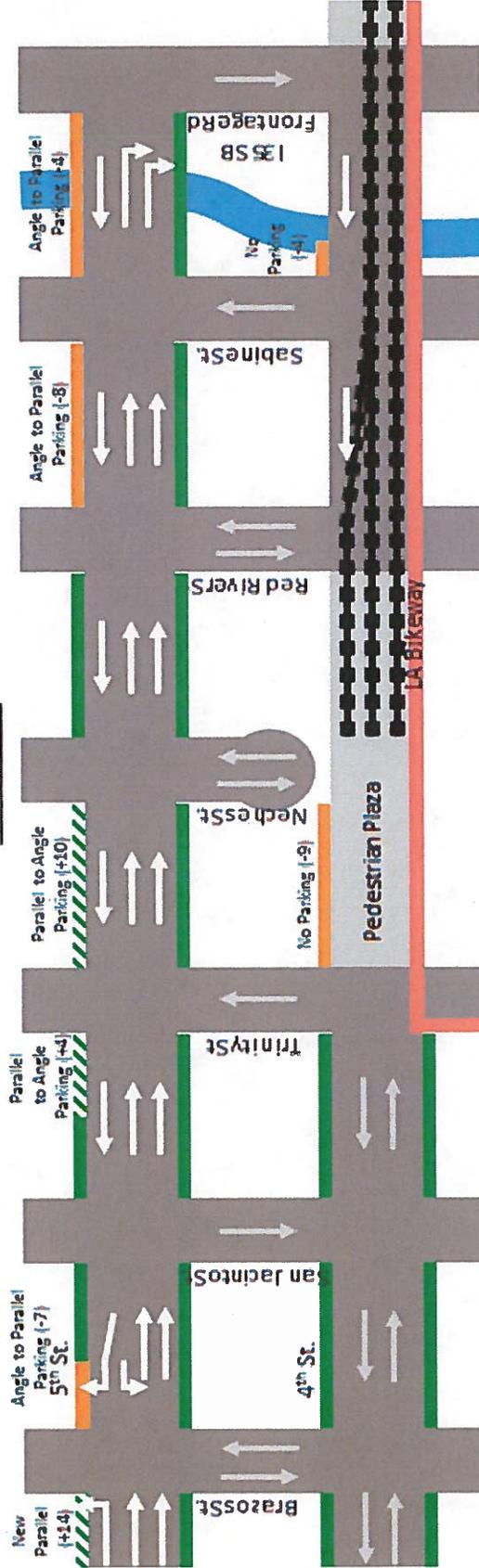
**5th Street Two-way Conversion
4th Street Closure for Downtown Station**

- Parking to Remain or Existing
- Parking to be Added
- Parking to be Removed

Existing



Proposed







MEMORANDUM

TO: Marc A. Ott, City Manager
Robert Goode, P.E., Assistant City Manager

FROM: Robert Spillar, P.E., Director,
Austin Transportation Department

DATE: September 14, 2016

SUBJECT: Traffic Analysis of 5th Street/4th Street Grid
Capital Metro Downtown Station Expansion

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For special event times, there is a substantial reduction in congestion throughout this portion of the grid because key constraint points within the grid are eliminated or significantly improved.

Based on these findings, Austin Transportation Department engineers recommend that we proceed with design and planning for conversion of East 5th Street to two-way operation, with two lanes east bound (as is today) and one lane west bond between Brazos Street and IH 35 and restrict the use of 4th Street between Trinity and IH35 for the appropriate modal use (transit, pedestrian, bicycle).

Other traffic revisions will likely be necessary related to parking spaces, bus stops, and sidewalks to achieve the joint City and Capital Metro vision for this area. These changes and the modification of access will be made administratively using the authority of the City Traffic Engineer. The authorization for placement of the expanded rail station within the right-of-way will be brought to Council in October as an inter-local agreement for execution.

Should you have any questions, please contact me at your convenience.



MEMORANDUM

To: Traffic Study Files

From: Lee Austin, P.E.
Traffic Management Division
Austin Transportation Department

Date: September 1st, 2016

Subject: Study of traffic impacts of two-way conversion of 5th Street from IH 35 to Brazos Street and closure of 4th Street from Red River Street to Trinity Street

Location: East 4th and 5th Streets from Interstate Highway 35 to Brazos Street



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At the direction of Council, the Austin Transportation Department (ATD) completed a traffic analysis of the proposed E 4th St Station to be constructed between Red River St and Trinity St. The proposed plan would require that two links of E 4th St be restricted to pedestrian, bike and transit use only. The plan requires that Neches Street be terminated in a cul-de-sac at its intersection with 4th Street. Three train platforms would be constructed in 4th Street between Red River and Neches Streets. A pedestrian plaza would be constructed between Neches and Trinity Streets and would serve to handle large crowds waiting for the rail line.

To achieve the plan, vehicular traffic would be restricted from the project blocks. East 4th Street would be limited to local traffic between the SB IH35 Frontage Road and Red River Street. East of Trinity, there are no plans for modifications to E 4th St.

Several stakeholders have expressed concern, including the Greater Austin Chamber of Commerce which offices in the Hilton building, the Hilton hotel, and the Austin Convention Center. To examine these concerns, ATD conducted analysis of the existing grid configuration and also of a concept that would convert E 5th St to two-way traffic between IH35 and Brazos St as a replacement for losing capacity in the E 4th St corridor. Both the PM Peak period and a typical "Entertainment Hour" scenario where E 6th St was closed were evaluated. The Entertainment Hour scenario is of special concern to ATD as E 6th is regularly closed to vehicular traffic multiple times a week and without E 4th St, there would be no westbound access from IH35 for eight blocks from Cesar Chavez to E 8th St. These PM peak and the Entertainment Hour periods represent the highest volume periods for this portion of the grid.

Existing Conditions:

Currently, E 4th St is a one lane westbound between the southbound IH35 service road and Trinity St (four blocks); the MetroRail Red Line track is immediately south of E 4th St and the Lance Armstrong Bikeway is south of the rail. West of Trinity St, E 4th St is two way with one lane in either direction. Two blocks in from IH35, E 4th St is controlled by a signal at Red River; the signal serves as the rail crossing traffic control when a train arrives and also has a signal phase for the bikeway. At both Neches St (one block west of Red River St) and Trinity Street on the following block west, E 4th St is controlled by an all way stop. E 4th St carries relatively little traffic although the volume increases when E 6th St is closed and at those times, the queue frequently backs up from Trinity St to the IH35 service road.

E 5th St is a one way eastbound major arterial out of the downtown core and its highest traffic volumes are during the PM peak hours. Currently, E 5th St has three lanes crossing Congress which drop to two through lanes at Brazos St. Past Brazos, it varies from three to four to two lanes between Congress and the southbound IH35 service road. However, E 5th St's capacity to access IH35 is ultimately constrained by the two lanes section between Red River St and southbound IH35 service road. The SB service road does not directly access the IH35 main lanes at that point; traffic reaching the frontage road must head south and then either use the U-turn under IH35 at 4th St to head north, using the ramp to the northbound main lanes north of 8th St or travel south and use the ramp to the southbound lanes south of Cesar Chavez. Recently, an Austin Energy chilled water line project reduced E 5th St to two lanes for over three years and large congestion increases were not seen.

Proposed Conditions:

To compensate for the loss of E 4th St as a viable route into the downtown grid, ATD studied the feasibility of converting E 5th St to two way operations. E 5th St would remain three westbound lanes at Congress but would become two westbound lanes at Brazos St. From Brazos St to the IH35 service road, there would be one WB lane. The space for the WB lane would come from converting angled parking to parallel between Red River and IH35 and from the underutilized third EB lane between Brazos and Red River. The possibility of taking E 4th St all the way to Congress was considered but a model showed that three lanes of EB capacity at Congress are required to prevent adverse delay at the intersection. The impact on on-street parking should be neutral. Attachment 1 shows a schematic of the proposed lane conditions.

Data Collected:

Motor vehicle Turning Movement Counts (TMCs), pedestrian and bicycle counts were collected in the PM peak 5-6 PM, when E 5th street has heavy commuter traffic heading eastbound to IH35. Counts were also collected during weekend Entertainment Hours when E 6th Street was closed and 4th street had heavier westbound flows into downtown. The counts were collected at a total of 12 intersections for both peaks: all intersections between Brazos and Sabine on both E 4th and E 5th Streets. The AM peak for E 5th Street is relatively light compared to the PM peak and the Entertainment Hour peak and was not collected. To address stakeholders concerns,

additional traffic counts were taken at the exit to the Hilton garage on Red River St as well as the Convention Center Garage on E 5th St during the PM peak hours and Entertainment Hours.

In addition, the Austin Transportation Department's Arterial Management Division has installed Bluetooth readers on various arterials which collect travel time and speed data. On E 5th St, ATD has data between Congress Ave and Red River St from March 2015 to the present day. These travel times include periods where E 5th St was reduced to two lanes during the chilled water line construction as well as when all lanes were open. ATD also compared the model to the travel times gathered by Google maps which tracks all traffic running the Google maps app.

Assumptions:

Very conservatively, we assumed that 100% of the existing WB volume on E 4th St would use the newly created WB lane on E 5th St while half the existing volume of E 4th St would continue to use E 4th St. Turns were reassigned based on land usage; i.e. SB Neches turning WB onto E 4th St was assumed to have come from the Hilton and reassigned to NB Neches turning WB onto E 5th St.

Modeling Results:

PM Peak

The primary concern in the PM Peak is to maintain existing eastbound commuter volumes and signal progression along E 5th St exiting downtown towards IH35. The traffic model shows that this can be done with the proposed two EB vehicle lanes and the westbound lane. During the PM Peak, eastbound travel times after conversion indicate only a few seconds increase, likely due to the introduction of opposing traffic which slightly delays existing EB left turns. Travel times westbound increase by approximately 1 minute when comparing the 5th St alternative to the existing 4th St configuration. However, the WB volumes on E 4th St (150 vehicles/hr) are currently very, very low compared to the volumes carried by E 6th St (~600 v/hr) and Cesar Chavez (~800 v/hr).

The chart below shows the predicted travel times compared to the measured Google travel times. The model is very close to the measured times although the model shows shorter existing travel times on E 4th St than the real-life Google data. This is probably due to the conflicts due to parking maneuvers, pedestrians, and bicycles which are difficult to recreate in a model. As signalized intersections on the proposed E 5th St WB lane will replace the current all-way stops on E 4th St, ATD believes that there will be negligible difference in travel times between E 4th St today and WB 5th St in the proposed scenario.

In addition, the model shows that there are sufficient gaps on SB Red River St to allow egress from the Hilton garage, both for the Hilton's valet operations and the residents and workers. Currently, many vehicles exiting the garage turn right to head SB on Red River St and then right again to head WB on 4th. In the future scenario, more drivers will probably turn left when exiting the garage to either head to WB E 5th St or WB E 6th St. If after implementation, the gaps for exiting left turns are not sufficient, the signal timing at E 5th St and Red River St can be

adjusted.

Time Period	Direction	Street	Period	Travel Time (min)	Google Travel Time (min)
PM Peak	WB	6th St.	Before	2.0	2 Min.
		C.Chavez	Before	3.7	2-6 Min.
		5th St.	After	3.6	NA
		4th St.	Before	2.4	4 Min.
	EB	5th St.	After	2.1	NA
			Before	2.0	3 Min.

Entertainment Hours

Queues along the frontage road from E 4th St routinely back up and block eastbound trips on 5th St. at the Frontage Rd., causing a subsequent backup on 5th St. Likewise, trips entering the grid on 4th St often try to turn north on Red River, Trinity and Brazos Sts where they run into road closures or the traffic congestion backing up along 5th Street. This condition results in circular congestion where each link in the grid is “locked” by the congestion of the intersecting street, thus nothing moves (e.g., gridlock). Conversion of one lane on 5th St to provide westbound capacity between the Frontage Rd. and Brazos eliminates the potential for circular congestion because the traffic displaced from 6th St. is able to use the 5th St. westbound lane before blocking the eastbound 5th St. traffic stream. Because all the intersections along 5th Street are signalized, this street is better able to handle the volume and flow of westbound traffic as compared to the numerous stop-signed intersections on 4th.

The chart below shows that travel times are improved immensely by adding the WB lane to E 5th St and preventing the gridlock that routinely occurs today.

Time Period	Direction	Street	Street and Direction	Travel Time (min)	Google Travel Time (min)
Entertainment Peak	WB	5th St.	After	3.5	NA
		4th St.	Before	11.8	5-9 Min.
	EB	5th St.	After	1.4	NA
			Before	14.8	3-7 Min.

Bluetooth Travel Time Data

E 5th St provides a fascinating real life test scenario of the proposed conditions. From March 2013 until the first week of March 2016, E 5th St was reduced to two lanes between Brazos and Red River for construction of the AE chilled water line. Looking at average travel times over the peak hour for each month, there is no more than a 20 second difference in travel times. The sole exception was during October 2015 which saw a 35 second difference which was very probably due to special events such as Formula 1 as well as some construction that temporarily required the use of the parking lane for a travel lane. Although the 20 second delay is higher than the less than 10 second delay the model posits, some of the difference may have been the inherent driver confusion during temporary traffic control situations.

Impacts to Local Stakeholders:

Of special consideration is the potential impact of the E 4th partial closure on the Hilton, north of E 4th St between Neches and Red River. The Hilton's drop-off area is on Neches and its parking garage entrance is on Red River. Currently, when a valet operator is returning a car to the drop-off area, he or she exits onto Red River heading south, turns right onto WB E 4th St and right again to head NB on Neches. If E 4th St is closed between Trinity and Red River, this movement will no longer be possible and, during the E 6 St Entertainment Hour closures, would result in an unacceptably long detour. Under the proposed scenario, the valet operators will be able to exit the garage onto Red River to head NB, turn left onto E 5th St WB, and left again at Neches. Although the modeling results show that the Hilton garage exit will operate at an acceptable level, if the gaps on Red River St are not sufficient to allow left turns from the Hilton garage, ATD can adjust the signal timing. However, during the Entertainment Hours, access to the Hilton Garage will be enhanced as the WB lane on E 5th St provides an additional route.

Another valet stand is located on the NE corner of E 5th St and San Jacinto at the Westin. During the site plan approval phase, the developer was informed that they would not be able to have a valet stand on E 5th St and they would need to plan for one on San Jacinto. After they agreed, circumstances changed during the AE waterline project and ATD was able to allow a valet on E 5th St. Currently during the E 6th St Entertainment Hour closures, the Westin valet heads EB on E 5th St, north on Trinity (APD will allow them in the barricades), and then uses the alley to cut over to San Jacinto. In the proposed scenario, the valet operator will have WB access and need to circle the block down San Jacinto to 4th to return to Trinity.

An additional local stakeholder is the Austin Fire Department station located on E 5th St at Trinity St. During the special events and the Entertainment Hours, the proposed conditions will both relieve existing congestion and give the fire station more reliable access. The addition of a WB lane on E 5th St will also give the fire station more response route alternatives.

Conclusions:

The modeling shows that adding a WB lane to E 5th St will add only a small delay to the EB PM peak commuter traffic. The limitations on the capacity of E 5th St are due to the conditions at

the SB IH35 Service Road, not the number of lanes at the signals west of IH35. This is consistent with observations during the PM peak and during SXSW when the traffic volumes on 5th St are much heavier than any other time of year. In addition, the long construction phase of the Austin Energy chilled water line has conveniently served as a real life “test case” and proven that E 5th St can function with no increase in delay with only two lanes.

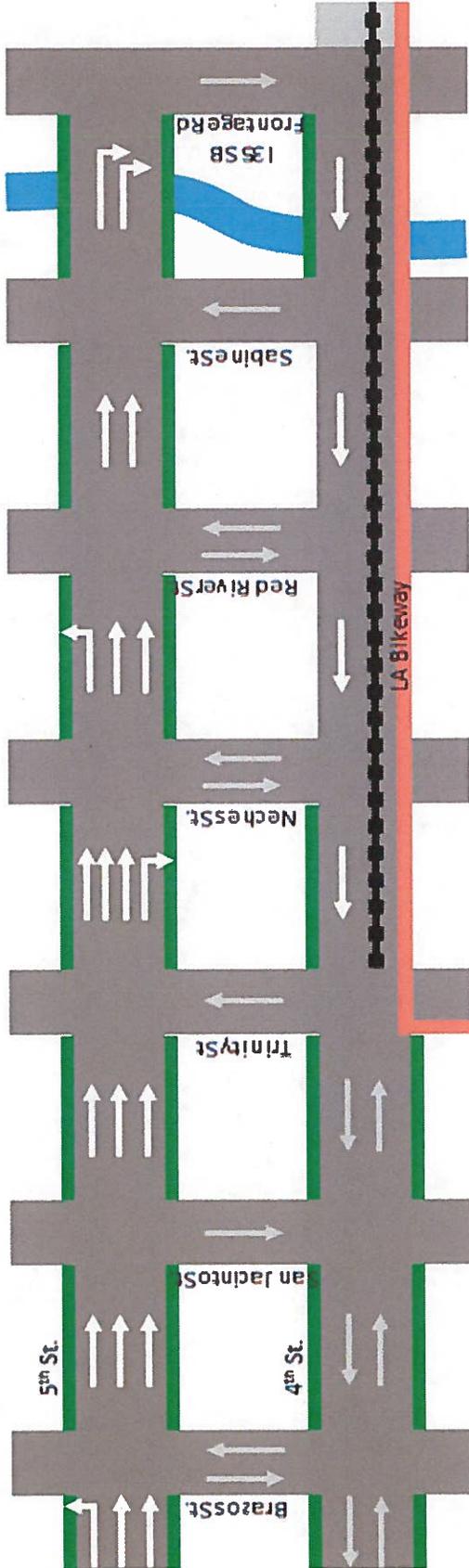
The WB lane on E 5th St will provide another route in the downtown core from IH35 and will more than adequately take care of the traffic from E 4th St. Currently, WB traffic on E 4th St is constrained by several stop signs (at Neches, Trinity, and San Jacinto) which limits the number of vehicles per hour and leads to very long queues during the Entertainment Hours when E 6th St is closed. The late night queue from E 4th St often backs up onto the SB IH35 Service Road and actually prohibits E 5th St from exiting. If that traffic now uses the WB lane of E 5th St, that conflict is eliminated. In addition, it is a well-documented engineering principle that a traffic signal can handle more vehicles per hour than a stop sign; the potential WB volume is actually increased under the proposed scenario.

Based on our analysis and observations, adding a WB lane to E 5th St will not significantly degrade EB traffic and will substantially enhance WB access to local businesses. Based on the very large improvement for the Entertainment Hour access, even if the proposed Capital Metro downtown station were not to implemented and E 4th St would remain open, ATD would still recommend adding a WB lane to E 5th St.

**5th Street Two-way Conversion
4th Street Closure for Downtown Station**

- Parking to Remain or Existing
- Parking to be Added
- Parking to be Removed

Existing



Proposed

